Remarks

Applicant respectfully requests reconsideration of this application. Claims 45, 47, 51, 55, 58, 62, and 66 have been amended. None of the claims have been allowed.

Information Disclosure Statement

Applicant wishes to disclose the status of other applications that may be considered related to the present application, as follows: serial no.: 10/315,624 (Office Action rejecting all pending claims mailed 04/09/09); serial no.: 10/315,694 (issued as US 7,493,078; 02/19/09); serial no.: 10/367,178 (Final Office Action rejecting all pending claims mailed 12/18/08); serial no.: 10/889,326 (Office Action rejecting all pending claims mailed 02/04/09); serial no.: 10/608,594 (Office Action rejecting all pending claims mailed 02/04/09); serial no.: 10/367,197 (Final Office Action rejecting all pending claims mailed 12/11/08); serial no.: 10/315,788 (Notice of Allowance mailed 05/15/09); serial no.: 10/395,749 (Office Action rejecting all pending claims mailed 07/16/08); serial no.: 10/407,445 (Notice of Allowance mailed 06/04/09); serial no.:11/800,543 (issued as US 7,741,665; 05/05/07); and serial no.: 10/435,005 (issued as US 7,215,660; 05/08/07).

Traversal of Claim Rejections Under 35 U.S.C. § 103(a)

Claims 45-72 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lau in view of Heinonen et al. (US 6,968,153 "Heinonen") and Lau in view of Oura (US 6,115,369 "Oura"). Applicant respectfully traverses this ground of rejection.

Lau, as discussed in Applicant's previous responses, teaches the user of low-power transceivers in channel-shifting RF repeaters to create a wireless network that can extend beyond each transceiver's useful range. A base station controls the

allocation of time on one or more available channels between competing transmitters, and may also control the function of the channel-shifting repeaters. When a given transmitter is transmitting, repeaters in range of that transmitter receive the signal, channel-shift the signal, and retransmit it. (Column 4, lines 6-19)

Regarding independent claims 45, 51, 55 and 62 the Examiner contends that Lau discloses all of the claim limitations except for *a third transceiver coupled to the first and second transceivers, the third transceiver operable to transmit and receive data in a second frequency band.* In support of his position, the Examiner specifically points to Fig. 4 and the corresponding sections of the written description (e.g., col. 5, lines 39-46).

Applicant respectfully submits that Lau does not teach a repeater that wirelessly receives and re-transmits on the same frequency channel, as recited, for example, in claim 45. In Figure 4, Lau teaches a network 58 wherein repeaters 68 and 78 receive transmissions on a first channel (CH1) and repeats or re-transmits on a different channel (CH2). This figure is consistent with his description on col. 5, lines 39-46, wherein Lau states:

> "In FIG. 4, T/R module 62 transmits on CH1. Repeaters 68 and 78 retransmit T/R module 62's signal on CH2 to the other TR modules. Note that T/R module 64 is in a range to receive both the original signal on CH1 and the repeated signal on CH2 from repeater 68. If so equipped, module 64 may select the signal it considers the strongest, or possibly even combine the signals at some point in demodulation. The other T/R modules receive on CH2."

In contrast, independent claims 45, 51 and 55, for example, define a network in which a wireless repeater both receives and retransmits digital data on the same channel (a first channel of a first frequency band). Similarly, independent claim 62 recites a plurality of repeaters that each receive and re-transmit data packets in the

same frequency band during alternate odd/even intervals. Therefore, Applicant respectfully submits that the Examiner's interpretation of Lau is mistaken

Note, for instance, that Independent claim 45 recites a repeater with first and second repeaters that receive and transmit data on the same channel during odd/even intervals, respectively. But Lau discloses that his repeaters are receiving and transmitting *simultaneously*, which is contrary to the language of the subject claims. According to the claimed invention, data received by the first transceiver during an odd time interval is transmitted during a subsequent even interval by the second transceiver. Applicant therefore respectfully disagrees with the Examiner's interpretation of Lau. Lau thus fails to teach the elements and limitations of the claimed invention.

Moreover, it is worth noting that he multiple transmitters and receivers referred to by Lau are source and destination devices. This is explicitly disclosed in column 5, lines 11-15, which states, "Each T/R module is connected to at least one digital data device 60, 66, 72, 76, 82 (each device being a source and/or a sink of digital data)." Lau teaches each repeater having two antennas, indicating that each of his repeaters has two independent RF transceiver subsystems, each for handling communications on a different frequency.

Furthermore, Applicant respectfully submits that in attempting to combine Lau with Heinonen and Oura to arrive at the claimed subject matter, the Examiner relies upon a patently unreasonable interpretation of the claims, which he then alleges is taught by Heinonen.. For instance, page 4 of the Final Office Action states, "[T]he Examiner interprets the claim limitations as relating to the process of extending a wireless LAN through three multiprotocol transceivers operating in different frequency bands." Contrary to the Examiner's interpretation, independent claims 45, 51 and 55 explicitly recite that the upstream (first) and downstream (second)

transceivers operate on the *same* frequency channel of the *same* frequency band. In addition, none of the subject claims recite a process (method), nor do they recite "multiprotocol" transceivers. Simply put, there is no reasonable basis for the Examiner's claim interpretation.

Heinonen, like Lau, fails to teach receiving and transmitting in odd/even time intervals using first and second transceivers. Heinonen instead teaches a Bluetooth repeater that may receive Bluetooth communications from an originating Bluetooth enabled device within range and then forward the same data to an intended recipient outside the range of the originating Bluetooth enabled device. Although Bluetooth is a radio frequency (RF) technology that operates at 2.4 GHz and is capable of transmitting voice and data, the effective range of Bluetooth devices is very short (e.g., 10 meters) and Bluetooth transfers data at the limited rate of about 1 Mbps, which is far less than what is needed for high-quality, high-bandwidth video transmissions using any known technology today, let alone at the time of Applicant's invention.

Lau teaches away from transmission techniques like Bluetooth that have limited data throughput. For example, Lau teaches away from the approach taken by Applicant by teaching a system and method that uses repeaters having multiple transceivers that transmit and receive simultaneously on different frequency channels. A person of skill reading Lau would definitely have been discouraged from attempting the claimed subject matter since Lau teaches away from Applicant's solution. Such a skilled person would also have lacked any motivation to attempt to combine Lau with either Heinonen or Oura since Lau specifically teaches that TDMA approaches are limited to a 1Mbps throughput, a rate that is adequate for a mobile phone system, but which is completely inadequate to transmit real-time audiovisual data content.

Applicant therefore respectfully submits that a person of ordinary skill, upon reading the Lau reference, would be discouraged from attempting to implement a wireless repeater having first and second transceivers that receive and transmit on the same frequency channel during odd/even time intervals. Lau also teaches away from technologies that have transmission range limitations, which Bluetooth certainly suffers from. Given Lau's disparaging remarks about technologies such as Bluetooth, Applicant respectfully submits that a person of ordinary skill in the art would have lacked any motivation to combine / modify Lau with Heinonen to arrive at the claimed subject matter. Furthermore, Applicant respectfully submits that such an ordinary practitioner would certainly have lacked any reasonable expectation of success at achieving the claimed invention in of any such combination.

Heinonen is strictly limited to teaching Bluetooth repeaters in combination with Bluetooth source and destination devices. In this regard, the shortcomings of Bluetooth technology are well known to persons of ordinary skill in the art. Heinonen does not teach the use of 802.11a, b, or g transceivers with data throughputs of 11 Mbps or greater as alleged by the Examiner. The only reference to 802.11 technologies in Heinonen is found in a single sentence of column 4, lines 10-15, which reads, preceded by two contextual sentences:

> Each pair is comprised of two Bluetooth chips C1 and C2. In one embodiment, the repeater pairs 193, 193b block out all communications other than transmissions coming from the other pair. In an alternative embodiment, a portion of each repeater pair is replaced with another communications link such as, but not limited to: Bluetooth with directed antenna; cellular; IEEE 802.11a, b and g; physical links (i.e., Ethernet, twisted pair wiring, CAT 5 cabling, etc.); and/or the like.

Applicant respectfully submits that such a configuration would limit the transmitted data rate to the data rate of the slowest link in any repeater pair. Since each repeater pair explicitly includes at least one Bluetooth chip C1 or C2, which limits the data rate of any configuration to the 1Mbps data rate of Bluetooth, this

teaches away from any configuration that would support high data rate transmissions (e.g., 11Mbps) over a wireless network that includes a plurality of repeaters arranged in a transmission chain, as defined, for example, in claim 55. Furthermore, this single sentence of Heinonen provides no clue to a person of ordinary skill how to combine Bluetooth devices (which are limited to transfer rates of about 1 Mbps) with an IEEE 802.11a, b, or g communications link in such a way as to be able to arrive at data throughputs at least 10 times greater than the limited capabilities of Bluetooth.

Applicant wishes to point out that Figure 3 of Heinonen is limited, in its entirety, to Bluetooth devices (D1-D4), such that the system shown in Figure 3 has a maximum data transfer rate of about 1 Mbps, which is at least an order of magnitude slower than that specified in the subject claims, and a speed that makes it totally unfeasible to transmit high-quality video (e.g., at 11 Mbps or greater). To aid in the Examiner's understanding, the Wikipedia article entitled, "Bluetooth" (http://en.wikipedia.org/wiki/Bluetooth) is attached as extrinsic evidence of the common meaning of Bluetooth technology to a person of skill in the communication arts. This article also explains the very limitations which make Bluetooth not only unattractive, but unfeasible for high data rate (video) applications.

It should also be understood that Heinonen also fails to teach any protocol or scheme for avoiding frequency interference so as to not compromise data throughput through the network. Rather, Heinonen's purpose is to extend the range of Bluetooth devices by use of standard Bluetooth repeaters, without any concern to the impact this extension of range would have on data throughput. Given that Bluetooth was designed for low-bandwidth devices (e.g., input peripherals and audio devices) this is a reasonable trade-off since maximizing throughput is rarely a concern for Bluetooth applications. But Heinonen's approach would necessarily defeat the throughput data

rate of a wireless repeater attempting to approach the maximum throughput that is available in the wireless spectrum. In other words, Heinonen fails to teach receiving and transmitting data at a data rate of 11Mbps or greater in a transmission chain over a wireless network that includes a plurality of additional access points, as recited, for example in independent claim 55.

Oura teaches a portable telephone mobile communication system in which a Time Division Multiple Access-Time Division Duplex (TDMA-TDD) communication method is used for transmitting and receiving between base stations and mobile stations. TDMA is a technology for delivering digital wireless service using time-division multiplexing (TDM). TDMA is a well-known audio communication technique that works by dividing a radio frequency into time slots and then allocating slots to multiple calls. In this way, a single frequency can support multiple, simultaneous data channels. TDMA, for example, is used by the Global Systems for Mobile (GSM) digital cellular telephone system. TDMA technology basically shares a communications channel among several phone calls. TDD is commonly used with TDMA in cellular phone networks to allow a number of different users to receive forward channel signals and then, in turn, transmit reverse channel signals using the same carrier frequency.

To begin with, Applicant respectfully submits that Oura is non-analogous art since a person of ordinary skill would not reasonably be expected to look to the field of mobile telephone systems for a solution to the problem of wireless transmission of real-time audiovisual content. By way of example, Oura discloses that audio information is transmitted at data speeds of 384 kbps. (Column 4, lines 30-39) In contrast, Applicant discloses a wireless repeater transmitting data at a data rate of 11 megabits per second. Given the enormous difference in transmission rates and the completely different problems faced when transmitting content (e.g., video) at high

data rates versus low data rate transmission (e.g., simple voice data), Applicant respectfully submits that a person or skill working in the field of wireless networks with repeaters would not consider mobile phone communication systems to be within the same field of endeavor as the claimed subject matter.

Even if Oura were considered analogous art, Applicant respectfully submits that a person of ordinary skill would not have been motivated to modify or combine Lau with Oura. One reason why is because Lau explicitly teaches away from an approach in which wireless repeaters receive and transmit data on the same frequency channel during odd/even time intervals. For instance, Lau disparages systems that utilize CSMA/CA techniques as well as TDMA services, wherein one transceiver communicates with another transceiver on a channel only when the channel is not already in use. (See column 2, line 25 through column 3 line 29) Furthermore, Lau points out that the disadvantages of CSMA/CA and TDMA techniques include a throughput limitation of 1 Mbps, a range limitation of less than typical household dimension, bandwidth inadequate for multimedia, limitations in the number of active devices, and wasted bandwidth.

By teaching a system and method that uses repeaters having multiple transceivers that transmit and receive simultaneously on different frequency channels, Lau teaches away from the approach taken by Applicant. A person of skill reading Lau would definitely have been discouraged from attempting the claimed subject matter since Lau teaches away from Applicant's solution. Such a skilled person would also have lacked any motivation to attempt to combine Lau with Oura since Lau specifically teaches that TDMA approaches are limited to a 1Mbps throughput, a rate that is adequate for a mobile phone system, but which is completely inadequate to transmit data at a data rate of 11Mbps.

It is also worth mentioning that time-division multiplexing (TDM) is very different than the repeating of data packets over a digital network defined in the subject claims. TDM is a type of digital or analog multiplexing which two or more bit streams are transferred apparently simultaneously as sub-channels in one communication channel in which they would otherwise interfere with each other, but are actually physically taking turns on that *one* channel so as to not interfere, but at the cost of reduced data bandwidth per bit stream. Applicant's claimed subject matter does not multiplex *multiple* bit streams on sub-channels of *one* communication channel at the cost of reduced data bandwidth per bit stream. Rather, the subject claims define a counterintuitive approach of transmitting digital data packets of a *single* bit stream during alternate odd/even time intervals so as *prevent* reduced data bandwidth of that single bit stream. This approach is neither taught by the TDM or TDMA-TDD schemes respectively disclosed in Lau , Heinonen, and Oura, nor is such a scheme suggested by their combined teachings. Indeed, TDM or TDMA-TDD would defeat a key purpose of the subject claims, which is to prevent the reduction of data bandwidth.

In sum, neither Oura nor Heinonen provide any of the teaching missing from the base Lau reference. Moreover, given that Lau explicitly disparages approaches such as those taught by Oura and Heinonen, Applicant respectfully submits that a person of ordinary skill in the art would have lacked any reason to combine or modify these references in the manner suggested by the Examiner. Furthermore, such an ordinary practitioner would have had no reasonable expectation of success at achieving Applicant's claimed invention in view of the Examiner's selective combination of the teachings of the cited references.

Applicant respectfully submits that for all the reasons given above that a person of ordinary skill in the art considering the cited prior art references at the time

of Applicant's invention would have not been led to, or able to achieve, the subject matter of Applicant's amended claims.

Accordingly, Applicant respectfully requests that the rejections under 35 U.S.C. § 103(a) be withdrawn. Applicant respectfully submits that all remaining claims are now in condition for allowance.

Please charge any shortages of fees or credit any overcharges of fees to our Deposit Account No. 50-2060.

Respectfully submitted,
THE LAW OFFICES OF BRADLEY J. BEREZNAK

Dated: 6/18, 2009

Bradley J. Bereznak
Attorney for Applicant
Registration No. 33,474

800 West El Camino Real
Suite 180
Mt. View, CA 94040
(650) 903-2264

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to: Mail Stop RCE Amendments, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 18, 2009.

Bradley J. Bereznak — June 18, 2009 Date